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# *Fishing in Alberta*

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## FISHING IN ALBERTA

by W. H. MacDONALD

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Department of Economic Affairs  
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HON. A. J. HOOKE,  
Minister

RALPH R. MOORE,  
Deputy Minister

DAN. E. C. CAMPBELL, Director

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# FISHING IN ALBERTA



MORE than three thousand miles of clear, fast-water fishing streams, many of them practically virgin, form a vast network throughout an area exceeding 14,000 square miles. This is the extent of that bushland on the slopes and foothills of the Canadian Rockies in Alberta called the Rocky Mountain Forest Reserve. Native cutthroat and rainbow trout thrive abundantly in many of these waters, and any mountain streams may harbor the Dolly Varden or bull trout and the Rocky Mountain whitefish. In addition, more than 1,000 miles of lowerland streams are devoted to the propagation of introduced brown and eastern brook trout. Arctic grayling are plentiful in the Peace and Athabasca river systems that drain into the Arctic Ocean. The whitefish invade most of the tributaries annually during their fall spawning journey from the rivers.

The slower streams and lakes of the farm belt and prairie teem with northern pike, perch, pickerel (walleye) and goldeye and many of the lower rivers provide large specimens of Rocky Mountain whitefish, grayling and Rainbow trout.

More than 500 crystal lakes, varying from mere pools of half a square mile to inland seas like Lesser Slave Lake of 475 square miles, contain pike. A quarter of these lakes contain pickerel (walleye) and as many contain perch. Many of these lakes are in remote areas difficult of access, but others within easy reach of urban centres provide full creels of these species.

By river systems, the best fishing waters include:

**The Athabasca River and Peace River systems** lie in the northern part of the Province, in an area much of which is only accessible by pack train. They provide angling for arctic grayling, rainbow trout and Rocky Mountain whitefish throughout the open season. Small rainbow trout are very abundant in easily accessible parts of the Athabasca system west of Edmonton. They may be taken most readily on dry flies of almost any pattern. Larger rainbow trout occur in some lakes and are taken mainly by trolling with spoons and wobblers. Fly fishing for large rainbow is good in some of the remote streams of the Athabasca drainage.

Arctic grayling are native to these river systems and provide an unusual treat for visitors from the south. A number of streams, in, notably the McLeod, Christina, and Smoky River systems, provide excellent grayling fishing. This species respond to dry flies, wet flies, nymphs, or to bait of any description.

The Rocky Mountain whitefish are taken mainly in the fall. Bait fishing is the most general method of capture, but wet fly fishing has been used with success.

The Dolly Varden trout occurs frequently in these areas. In deep holes, in the larger streams, these fish attain large sizes, often up to ten and more pounds. Fishing is best in the late summer and fall. Baited hooks provide the best lures.

**The North Saskatchewan River** system is most accessible from Edmonton and Red Deer. The best angling is provided by small streams and beaver dams located near Rocky Mountain House and Nordegg. The main fishes taken are the brown trout and the speckled or eastern brook trout, with frequent captures of native Dolly Varden, and occasionally rainbow. The general average is of fish weighing less than one pound, but beaver dams often yield larger fish. The Rocky Mountain whitefish migrate to the upper reaches of many of the streams in large numbers every fall.

**The Red Deer River** system lies to the west and southwest of the city of Red Deer, and embodies several streams which provide very good brown and speckled trout fishing. Particularly good are the Raven River and Dogpound Creek. These fish are mainly taken on dry flies. Many streams may provide specimens of Dolly Varden, and some of the smaller tributaries, though often inaccessible, contain rainbow trout in limited numbers. Rocky Mountain whitefish occur here also. This is a popular Alberta trout fishing area during the open season.

**The Bow River and Tributaries** comprise hundreds of streams containing trout, mostly cutthroat. The area is easily approached from Calgary or High River. The larger rivers of the system such as the Elbow, the Highwood, the Sheep, and the Jumping Pound provide angling for large cutthroat, rainbow, Dolly Varden, and Rocky Mountain whitefish. These rivers are swift, often torrential, and fishing them is no sinecure. Fly and bait fishermen are about equally divided. In the main Bow itself large trout are caught using buck tails or wobblers. Below Calgary rainbow and cutthroats from 4 to 8 pounds are not uncommon, but for many miles downstream the fish are frequently not considered good eating. Above Calgary, in an area known as Gap Lake, large brown trout are caught. The smaller upper tributaries provide excellent dry fly fishing for cutthroat, chiefly small fish of one pound or less.

Certain of the headwater lakes of the Bow system, notably the Spray lakes and the Kananaskis lakes, provide fishing for large trout, cutthroat in the former and rainbow and cutthroat in the latter. These fish are usually taken by trolling with spoons, wobblers or minnows. They range up to twelve pounds in weight. Large Dolly Varden also occur in the lakes.

**The Oldman** system is in the southern part of the province and contains a number of locally famous trout streams. Among the best are the Racehorse, Dutch Creek, the Livingston River, the Crowsnest River, the Castle River, the Belly River, and Willow Creek. The district is characterized by large, fast growing cutthroat and rainbow. Dry fly fishing is excellent, but many fishermen claim the larger trout are taken on bait. Most of these streams are easily accessible by all-weather roads from such points as Claresholm, McLeod and Pincher

Creek. Availability of these streams makes fishing in the area very popular, and often by mid-season trout have become wary to the point of scarcity. An expert or careful fisherman, however, will rarely return empty handed.

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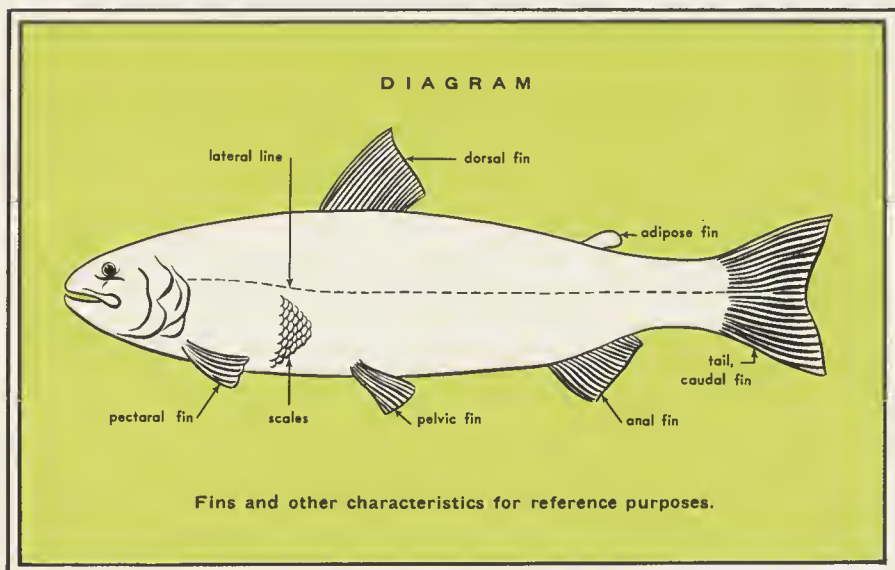
Angling for pike, pickerel, perch or goldeye may be carried on in restricted areas for ten and a half months of the year. The abundance of great northern pike is a notable feature and they may be found in most of the rivers and in hundreds of lakes throughout the province. Pike are caught by casting with plugs, spinners or wobblers or by trolling, or by still-fishing or casting with minnows.

Numerous perch lakes scattered throughout the province are visited annually by many anglers. Fishing is carried on chiefly with worms. They are easily lured to hook.

The migratory habits of pickerel or wall-eyes make their capture more difficult, but they are taken in the lower reaches of many of the rivers and quite a few well-known angling lakes. Fishing methods are roughly the same as for pike.

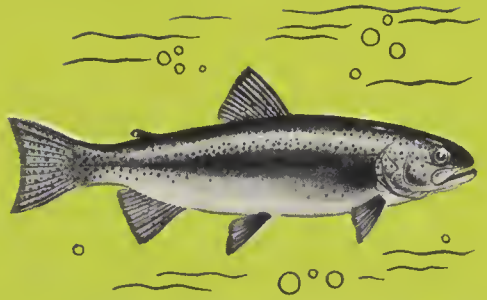
A number of Alberta lakes have become quite famous for their production of the above species. Among these are Buck Lake, Lac Ste. Anne, Lac La Biche, Lesser Slave Lake, Baptiste Lake, Pine Lake, Moose Lake, Elkwater Lake and others.

Goldeyes are not as frequently taken by anglers, although they are widespread in the lower reaches of many of the rivers of Alberta. They are particularly abundant in the lower Bow and Red Deer in southern Alberta, and in the Pembina and Athabasca in the north. Goldeyes are taken on bait.



# Rainbow Trout

*Salmo gairdnerii*



THIS is one of the finest game fish known, and marked continent-wide for its beauty, elusiveness, and courage. Requiring a good supply of cool, fresh water, the rainbows are confined to waters reasonably approximating mountain streams. Thus, in Alberta, their environment is limited to an area ranging along the east slope of the Rockies, and rarely exceeding one hundred miles in depth. A chief exception is that region known as the Cypress Hills in the extreme south-east corner of the province. In the Rocky Mountain regions, the rainbow is, by natural choice, more common in west slope streams. Extensive planting programs over a period of many years have, however, greatly encouraged its propagation throughout large areas on the east slope.

The diet of rainbow trout consists of both aquatic insect nymphs, such as may-flies and stone-flies, and a variety of those terrestrial insects which fall into the water, such as ants, beetles, and mature flies. A predator as well, this trout eats other small fish (including its own fry), and larger specimens have been found with mice and young ducks in their stomachs.

Spawning in the spring or early summer these fish require stream or lake gravel beds in which to deposit their eggs.

The rainbow derived its name from a rosy-hued stripe, blended to a silvery background, that runs along each side, often from gill cover to tail. Like all trout it has a large mouth and a liberally black-spotted body. Other more distinctive features include a lateral line scale count of usually less than 140, and a lack or insignificance of hyoid teeth. These latter are found in some trout on the floor of the mouth, back between the gill openings (see diagram page 8).

The artificial propagation of the rainbow trout on the east slope of the Rockies has resulted in a noticeable inter-breeding of rainbow with the native cutthroat trout. Specimens now occur, with great frequency, in sections of the Bow and South Saskatchewan River drainages that present a variety of features applicable to both species. At present research is under way to determine the exact status of this species, that is now being variously and loosely termed "Bow River hybrid", "steel-head", or either rainbow or cutthroat, without being properly identified. Large specimens of this group have been taken abundantly from the Bow River, east of Calgary, but elsewhere catches exceeding two pounds in weight are rare, with the majority running from six to twelve ounces.

Little need be added to the rainbow's well advertised excellence, both on the end of a line or in the pan.



# Loch Leven or Brown Trout



*Salmo trutta*

THIS species has come to Alberta through artificial propagation, and is, in fact, not even native to the continent of North America. The original brown trout first came from Germany, and was called the German brown. A branch of this species, raised in Scotland was called the Loch Leven trout, but the true origin of the planted specimens now living in Alberta waters is so immersed in history that either of the two names may be applied to the species *Salmo trutta* without fear of contradiction.

There has been a marked success attending the introduction of brown trout in the lower foothill waters of south-central Alberta. While the range of their habitat has not definitely been fixed, general propagation practice has assigned this trout to waters that are rather more quiet and warm than those which contain the native cutthroat. It has become common practice to regard quiet, lightly stained waters as being typical brown trout streams.

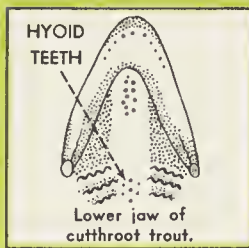
The Loch feeds in the same fashion, and following the same general pattern as other trout. That is, it takes aquatic insect nymphs from within the water, and mature insects from the surface. It also has the usual trout predation habits, and feeds on small fish when these are available. It spawns in the late fall of the year in suitable gravel beds.

The brown is a black-spotted trout with the exception that the tail fin remains relatively clear. A sprinkling of red spots interspersed by the odd light blue ones occurs on the sides. A typical trout mouth structure of generous size, and well developed pectoral fins round out the general picture of this species. The vomerine teeth (see diagram page 9), as in all trout, are numerous and well developed.

To the average fisherman, catching a brown trout represents a real challenge. This is probably the most wary of our fish, and even experienced fly fishermen find their skill well taxed to hook a member of this elusive clan. It is just possible that the Loch will teach us some much needed lessons on the value of discriminatory fly fishing, and in this way serve to amplify the amount of sport provided by our total trout population.

# Cutthroat Trout

*Salmo clarkii*



THE cutthroat is the most widespread true trout native to our east slope drainages. It is closely related to the rainbow, and presents some very similar characteristics both in appearance and general habits, and for these reasons is an attractive angling species. In food habits it also resembles the rainbow closely, taking surface flies and insects plus bottom larvae and nymphs, as well as having the usual trout predation habits.

Cutthroat habitat also is restricted by a preference for cool waters with a minimum of turbidity, and they are, therefore, found only in the region of the Rocky Mountains and their foothills.

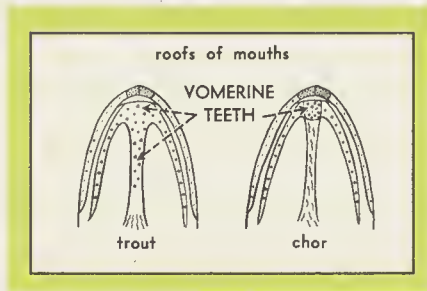
A spring spawning run has been found to extend well into July, with eggs being deposited on fine gravel beds in streams. In many areas the growth of present cutthroat populations is relatively slow. As a result the bulk of today's cutthroat catches remain in the under one-pound class, with many of our colder, swifter streams rarely producing specimens larger than ten-ounce fish. Some lake-dwelling types of much larger proportions have been taken, and those fish having cutthroat characteristics that find their way to the eastern Bow river also tend toward greater weight.

Recognition of cutthroat depends largely on two main characteristics. One is the two red slashes that appear on both sides under the lower jaw, sometimes concealed in two deep creases, in which case these must be spread in order to view the mark. The second feature is the occurrence of hyoid teeth, deep in the mouth on the lower side, and which may be felt by inserting the finger into the throat of the fish (see diagram). In general, the cutthroat is a black spotted trout which often has a rosy wash on the belly, and the usual large trout mouth and trout fin placement, plus those particular points referred to above.

When hooked, this trout leaps like a rainbow, and generally puts up a battle that should satisfy the most choosy angler. In common with all freshly caught trout flesh, little need be said about its appeal to the palate. A morning dish of cutthroat fried with bacon is decidedly ambrosial in quality.

## A NOTE ON TROUT AND CHAR

Within the family Salmonidae are the two separate groups, trout and char. All true trout are of the genus *Salmo*, and in Alberta these are the rainbow, cutthroat, and Loch Leven. The chars are of two different genera. One — *Salvelinus* — includes the eastern brook and Dolly Varden, and the other — *Cristivomer* — applies to lake trout. The chief means of distinguishing trout from char is by reference to the teeth on the bones of the upper mouth. In trout a central shaft, or vomer bone, as it is called, is well supplied with teeth, and in the char the appearance of vomerine teeth is restricted to the front part of the mouth only, (see diagram). Similarity of these two groups is given weight by their common family name, their generally identical body structure, and their common choice of environment. For these latter reasons only have they become grouped under the common term "trout". Following are some details concerning the chars that are found in Alberta.



# Lake Trout

**Cristivomer  
namaycush**



THE word namaycush is an Indian name for trout, even though this fish is not a true trout, but a char. The species is also sometimes called Mackinaw trout. This is the giant of our lake fish, and specimens weighing more than fifty pounds were common at one time. Such monsters are rare in Alberta now, but still abundant in the great lakes of the Northwest Territories. Because it lives only in deep cold lakes, the incidence of lake trout in Alberta is rather low; it appears as a common species in three of our large lakes, at Peerless lake, Namur lake, and Cold lake.

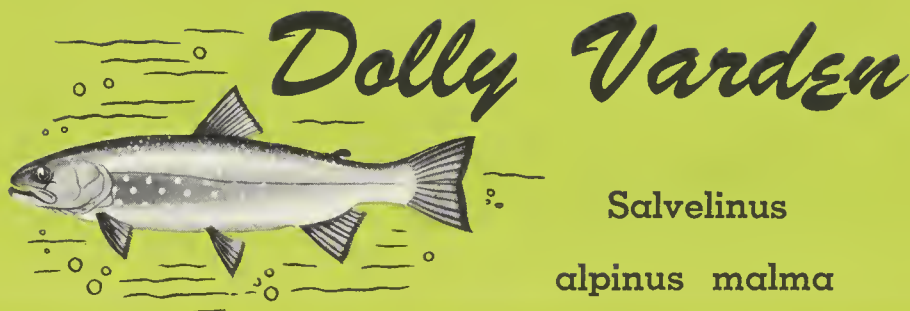
The "Mackinaw" spawn in October, depositing their eggs on rocky shoals, and leaving them to hatch in the spring. They prefer cool water, and spend a good part of July, August, and September in the deeper regions of the lake.

Of omnivorous feeding habits, the lake trout will gobble almost anything, and in common with other predators he makes a fine angling fish. It is an unforgotten battle, that a twenty-five-pound lake trout puts up on the end of a casting rod line. To avoid a decrease in numbers, and wishing to preserve some specimens of this "royal" family, commercial fishing for lake trout in Cold lake is now prohibited.

The coloring of lake trout varies widely. In general, however, the background is dark, overlayed with light greyish, white, or even pinkish spots. The spots extend to the back and dorsal and caudal fins. At spawning time the body will often assume a brilliant red background. The tail is deeply forked, and the teeth on the vomer bone are restricted, in the char fashion, to the front of the mouth.

Lake trout flesh is sometimes inclined to be pungent in taste, due to a large amount of oil and fat in the tissue. However, well cooked, or "canned" it is very tasty.





**Salvelinus**

**alpinus malma**

THE native Dolly Varden is another member of the char group, and may be found in all of our Rocky Mountain east slope drainage systems. A rather maligned species, (by the purist angler), it should be pointed out that sometimes the hardness of this fish has provided angling in waters where other species have proved unfit. Too, being a less discriminating feeder, the Dolly provides plenty of good fishing for those less fortunate sportsmen who must depend on a willow pole and baited hook for their sport. The thrill of his first bull trout starts many a bare-footed urchin off on a spare-time hobby, and causes him to devote much of the rest of his life to the general betterment of Alberta angling conditions.

The bull trout spawns in the fall of the year. Its diet runs along the same general lines as the other salmonid fishes, but a feeling persists, among fishermen, that it is somewhat more voracious and predatory than its trout cousins. This is a rather arbitrarily imposed indictment, since predation by all salmonids depends largely upon the availability of other acceptable food, and more especially upon the amount of regular forage fish to be had. It is well known that all salmonid fish are predaceous by nature, but it may be that chars have an edge in tendencies of this kind.

The Dolly is of rather drab appearance, with grey sides, darker back, and red or orange spots on the sides; a white leading edge marks the pelvic and pectoral fins. The body tapers from a blunt head, and a broad, well-developed mouth. Teeth characteristics are of the char type, and the tail is reasonably well forked.

Fishing for bull trout usually requires the use of a baited hook, but there are instances when they will take a fly, and often with a dash of real ardor. Generally speaking though, this species behaves in a more sluggish fashion, and does not belong in the same angling class as the other salmonid species. The flesh of Dolly Varden has exceptional food qualities. Dry, but tasty, it "keeps" better than most trout under normal summer conditions.

# Eastern Brook Trout



*Salvelinus fontinalis*

THE "brookie" or speckled trout, as it is often called, is not native to east slope streams, but is being introduced at a fairly steady rate. The fact that it is a char, and not a true trout, does nothing to detract from the sporting competition offered by this fine fish.

Brook trout spawn in the autumn, and require the usual gravel beds in lakes or streams for this purpose. Under natural conditions the eggs "hatch out" the following spring. All Alberta plantings to date have been made with fish reared from imported egg stock, and, as yet, no attempts have been made to take spawn from locally reared specimens.

Its diet roughly parallels that of the other salmonid fishes, for it lives chiefly on surface and subsurface insect life as well as young fish and minnows. Excessive predatory habits are often charged to the brook trout, but evidence submitted to date has been of a casual and circumstantial nature. The same reasons for predation apply here, as are stated in the case of the Dolly Varden.

Brook trout are quite easily distinguished. In the water, the first notable feature is a definite white margin on the leading edge of the pectoral and pelvic fins (see diagram page 5). Since this feature might also apply to Dolly Varden trout further investigation is necessary. The back of the brook trout has distinctive light vermicular markings on a dark background, commonly referred to as "worm tracks", while light orange spots with blue halos appear on the sides. The tail is not well-forked, and, in Eastern Canada and the United States, this feature has promoted the name "square tail" as a common reference to brook trout. The char vomer structure is evident with teeth restricted to the forepart of the vomer bone.

The "brookie" makes a fine angling fish and fights gamely to prevent capture. His apparent tolerance for fast cold water, plus a char characteristic to thrive under adversity, has led to recent introductory planting in streams, that are not, at present, providing good cutthroat growth. Initial observations of these plantings suggest favorable results. His fame as a sporting variety, in Eastern Canada is legendary, and it is hoped that he will become established in some Alberta waters, that appear unsuitable for less hardy trout.

# Arctic Grayling



**Thymallus  
signifer**

THE grayling is native to our arctic watershed, and is commonly found in many sections of the Athabasca and Peace River systems. A close relative, which may perhaps be an identical species, is said to appear in a few Alberta streams in the south of the province. The northern variety only is dealt with here.

Its choice of food types the grayling as being insectivorous, and therefore active competition for food takes place where grayling and trout live side by side. Larvae, mature aquatic and terrestrial insects form the bulk of grayling diet, though stomachs have been opened that contained their own spawn and young. These feeding habits make grayling an angling fish on a par with trout, and while not quite so active on the end of a line, he takes the lure with trout ferocity and provides plenty of fight from that point on. Dry or wet fly may be used with good success, though he tends to take the dry fly from beneath rather than pounce upon it in the true trout fashion.

A grayling spawn camp was operated in Alberta in the spring of 1949, and fish were found ready for spawning during the first week of May. These specimens had chiefly come to small streams to spawn in gravel beds.

Not very noted for its size, the samples of the Athabasca watershed weigh up slightly better than our native mountain trout, though larger specimens appear frequently in the more northern localities, and particularly in the Northwest Territories. Research on the Montana grayling has given rise to the theory that age limitations have a direct effect on the size maxima of most specimens. Rarely have fish been examined in the temperate zones that exceeded six years of age. This phenomenon might possibly apply to some of the Alberta specimens, but recent studies on the Arctic grayling of Great Bear Lake have unearthed twelve-year-old fish.

The grayling has one contour feature that makes it unmistakable. This is large sail-like dorsal fin from which the species name, signifer, (standard bearer) is derived. The body, which is dark on top, blending into silvery purple on the sides and lighter on the belly, has a scattering of irregularity shaped dark spots, also on the side. An adipose fin is present, while a small head and a well-forked tail complete the picture of this species.

Grayling flesh as food is generally considered to be about as tasty as trout. The references above to his agility on the hook have adequate support from a growing number of discriminating anglers.

# Lake Whitefish

**Coregonus  
clupeaformis**



THIS species comprises the bulk of Alberta's commercial fisheries products. The propagation, nurture, and preservation of whitefish has been, and still is, the subject of an enormous amount of discussion and legislation. This is largely due to the fact that in the calendar year of 1947, for instance, over two and one-quarter million pounds of Alberta whitefish were marketed at a value of some seven hundred thousand dollars.

Whitefish are found in almost all of our northern Alberta lakes, and artificial propagation has been the means of introducing them within irrigation reservoirs, such as Lake Newell and Lake McGregor, in the southern part of the province.

The whitefish are said to be fall spawners. In Alberta, however, they may spawn at any time from October to January. Spawning takes place in lake shallows or in sizable rivers, the eggs being deposited in small batches over a period of days. The eggs lie on the bottom during the winter, and are ready to "hatch" by spring.

Alberta whitefish seldom exceed seven pounds in weight, and twenty-four inches in length. Their food is largely picked up off the bottom, and consists of small clams, crustaceans, and insect larvae. They are rarely, if ever, taken on a hook and line.

The sides of this fish are of a greyish color, shading to black above and white below. In some deep lakes they are almost all pale, hence the name whitefish. The body is oblong in shape, compressed at the sides, and in profile often presents a humped appearance at the forepart of the back, particularly in older fish. The whitefish may be distinguished from its near relation, the tullibee, by reference to its snout. That of the whitefish is short and deep, while that of the tullibee is longer, more slender, and directed forward. Confirmation may be made by attention to the gill-rakers of each species (see diagram page 15). Those of the whitefish are less numerous and shorter than those found in tullibee.

Artificial whitefish propagation as a means of increasing lake yields has received more than a fair test in Alberta waters, but results do not seem to justify depending greatly upon this method of increasing production. It is now apparent that, provisional to the ungovernable fluctuations in natural conditions, our best whitefish insurance is the careful administration of fishing intensity.



As food, the excellence of whitefish flesh is given adequate attestation by its prominence on the American import market. In fact, whitefish alone of all foods, provides a nearly balanced diet. This made much easier the opening of our north country before the days of aircraft. The pioneers who lived on whitefish were not afflicted with deficiency diseases such as scurvy. It may be stated that, before the days of air transport, our north would have been wholly uninhabitable, were it not for this fact.

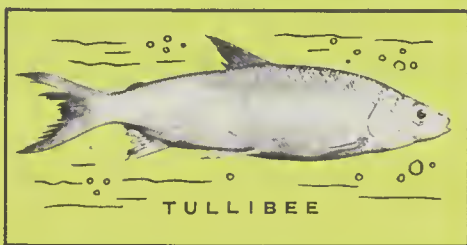
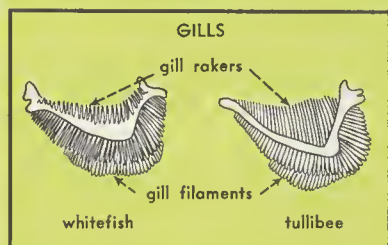
## TULLIBEE OR CISCO

*Leucichthys* sp.

THIS lake herring, a small cousin of the whitefish, inhabits many of our northern lakes. Here the ravages of a parasitic worm have been so extensive that the sale of tullibee as an export commodity has practically ceased. A fine table fish has thus been relegated to the level of animal food. In the calendar year of 1947 the mink raisers of Lesser Slave Lake alone fed over four and one-half million pounds of tullibee to their animals.

In general habits the tullibee closely resembles the whitefish, and at first glance presents a very similar appearance. The chief physical differences have been noted in the section on whitefish. Tullibee food habits differ in that the diet consists mainly of plankton, that minute assemblage of plant and animal matter that floats freely throughout the lake waters, hence the long, fine gill-rakers. It may be seen surfacing in the evening, and presumably feeding on surface insects, but there is no record of them ever having been consistently lured by artificial flies. Tullibee spawn in late fall and early winter.

Tullibee flesh is excellent food, and when smoked is considered to be even better. It is hoped that some day at least a part of Alberta's large tullibee resources may be used in this fashion.



# ROCKY MOUNTAIN WHITEFISH

*Prosopium williamsonii*

SINCE this species is a member of the family Coregonidae, and a close relative of the common whitefish, the rather prevalent application of the name "grayling" to this fish is incorrect. The "Rocky" inhabits both the Saskatchewan and Mackenzie drainage systems of our east slope with varying abundance, but it is common enough so that many a trout fisherman fills his creel with them as a less desirable alternative.

The food of this whitefish closely parallels the diet of trout, for it lives chiefly on the insect larvae and pupae of the streams, preferring the bottom-dwelling species. This being the case it can be said to compete with trout for food, and, in so doing, may be the cause of certain inroads on trout populations. There is the occasional report of spawn being found in their stomachs, but apparently in such rare instance as to be insignificant.

The most notable identification features of this group are: a small head, small mouth with only traces of teeth, and a generally blunt snout. The body color, which is silvery on the sides, blends to grey on the back and white on the belly. A prominent adipose fin extends backward somewhat beyond a line taken vertically from the rear extremity of the anal fin. Its gill-rakers are even less numerous and shorter than those of the common whitefish.

Stream spawning activities occur in autumn, and the "runs" of Rockies often assume very large proportions.

This variety is undoubtedly first-rate as a pan fish, and considering its present abundance there seems little cause for concern over its possible depletion. As suggested above, this fish can provide some very acceptable angling on that gloomy day when the trout just don't seem to bite.



ROCKY MOUNTAIN WHITEFISH

# *Game Fish of Alberta*



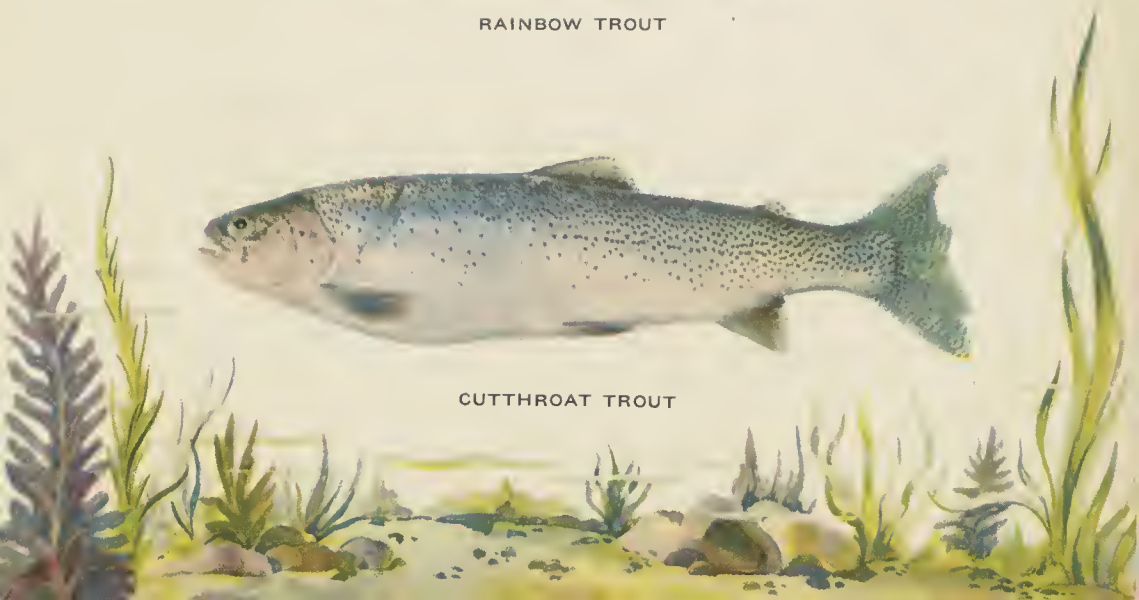
THREE COMMON COLOR PHASES OF  
BROWN OR LOCH LEVEN TROUT



RAINBOW TROUT



CUTTHROAT TROUT









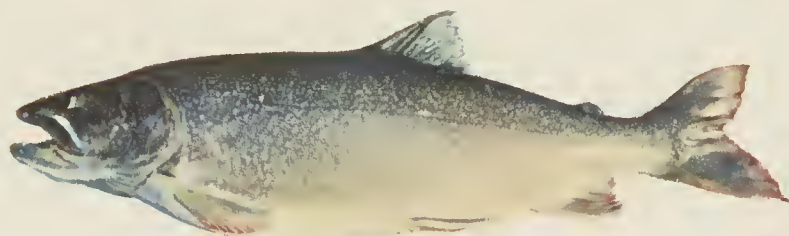


For authentic road information, refer to the official Alberta Government road map which also shows details of lakes and streams indicated above.

# Game Fish of Alberta

Popular

USED



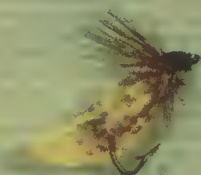
LAKE TROUT



BLACK GNAT



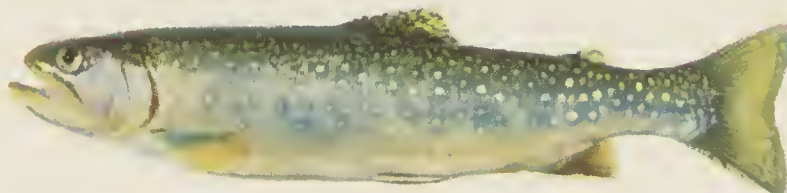
DOLLY VARDEN TROUT



GRASSHOPPER



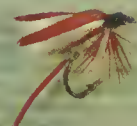
GRIZZLY KING



EASTERN BROOK TROUT



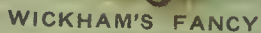
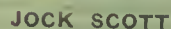
KING FISHER



PAR BELLE




## IN ALBERTA WATERS



Your cards help authorities to legislate angling intelligently.



DISTRICT		Name					
SPECIES	Number Retained	Number Released	LENGTHS			METHOD OF FISHING	
			Maximum	Minimum	Average		
RB						Still Fishing	Boat
CT						Trolling	Shore
EB						Casting	Bank
LL						NUMBER OF FISH CAUGHT WITH:	
DV						Minnows	Plug
AG						Worms	Spinner
LT						Other Bait	Fly
RMW						FISHING TIME	
Others						Date	19
						From	a.m. To a.m.
						From	p.m. To p.m.
						Total Time	hrs. mins.
Average Depth Lake Fishing						WEATHER	
Estimated Distance Stream Fished						Warm	Clear
						Mild	Cloudy
						Cool	Rain

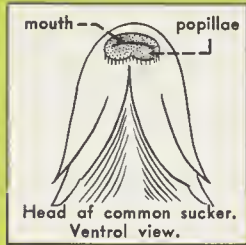
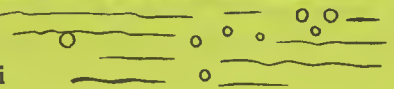
# Northern Sucker

*Castostomus catostomus*



# Common Sucker

*Castostomus commersonii*



THE two above named fish form the bulk of Alberta's sucker population, and they inhabit waters over the length and breadth of the province, remaining noticeably scarce in only the swifter, colder mountain streams.

Both suckers spawn in the spring, using either creek and river beds, or lake shallows. They were lately observed spawning on the same gravel bed, and at the same time as cutthroat trout, and neither species seemed to evince any concern over the proximity of the other, or any interest in the other's eggs. A much maligned breed, especially by anglers, the sucker is often accused of subsisting, at least in part, on the spawn of other fishes. Field investigations by competent authorities, however, continually fail to uncover any really significant predation of this kind.

The sucker's food consists mainly of insect larvae, molluscs, and small crustaceans gleaned from the floor of the lake or stream, plus an abundance of plant food, and mud or silt.

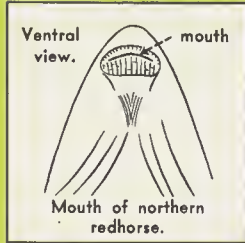
The characteristic feature of all suckers is the thick lips. In both common and northern suckers the lip surface is broken by a generous sprinkling of papillae, small pimple-like skin structures (see diagram). Comparing one with the other, the distinguishing features of the **northern sucker** are a greater number of finer scales over the body, and the extension of the snout, which carries well beyond the upper lip, and makes the mouth definitely inferior in position. Conversely, on the **common sucker** the scales are less in number and larger in size, and if counted along the lateral line will number fewer than eighty. Also the snout does not project beyond the upper lip. Because of a tendency toward lighter coloring this latter species is often called the white sucker.

In certain parts of Canada the flesh of sucker has become a common commercial product. In these places they are usually sold under the trade name of "mulletts". However, the chief value of this hardy species lies in its role as a forage fish. Pike anglers would do well to remember that their game might suffer severely if it were not for the countless numbers of sucker fry which contribute to the pike diet.



# NORTHERN REDHORSE

*Moxostoma aureolum*



THE redhorse is another distinctive form of sucker belonging to the family catostomidae, but of the genus *moxostoma*. While not nearly as common in Alberta as the northern and common varieties, a separate description is given to prevent its being confused with the other species.

It is rather difficult to distinguish the redhorse by external character. The lips are less thick than those of the other suckers, and less broken up into small tubercles. The snout projects well beyond the mouth. The body has reddish gold tints, and the paired fins are often red. A sure way to identify this fish is to open it and examine the airbladder. In the redhorse the airbladder is constricted into **three** compartments. In the other two suckers there are only **two** compartments.

This sucker is chiefly found in rivers. Otherwise, the food, spawning habits, and habitat will, in general, compare with the preferences of members of the catostomid family. It is also fished in other parts of Canada as mullet, and will turn up occasionally in Alberta, mixed with net hauls of other suckers. Its chief value is as forage fish for predator species.

Two other types of suckers have been reported to appear occasionally in Alberta waters:

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## JORDAN'S SUCKER

*Pantosteus jordani*

This is a small river sucker reported to have been found in the Oldman River drainage system of southern Alberta.

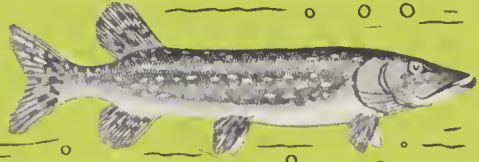
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## QUILLBACK SUCKER

*Carpiodes cyprinus*

Fish answering to the description of this species have been reported in the South Saskatchewan River near Medicine Hat. The greatly extended front rays of the dorsal fin justify the "quillback" name applied here.

# GREAT *Northern Pike* or JACKFISH *Esox lucius*



THIS hardy predator may be found in almost all sections of the province except the cold headwater streams of the east slope drainage systems. It is of equal importance to both angling and commercial fishing. Extensive angling for pike continues from year to year, and an additional one-half million pounds are marketed commercially per year, this being the annual catch of gill-net fishermen.

The pike's voracity is well known, and, while its food consists mainly of other fish, its diet often extends to include frogs, young ducks, and mice.

Spawning takes place in late April and May, and large numbers of eggs are deposited in grassy sloughs and shores. The young "hatch out", and begin to migrate back to deeper waters well within thirty days of spawning time. A large female pike may carry as many as 200,000 eggs, and with an adequate male population present, this would appear to make pike reproductive potential rank extremely high in comparison with other fishes. Except for the rare location, where the pike occurrence is restricted by water impoundment or damming, any artificial propagation of pike in Alberta would be an extremely futile gesture. The remarks above on pike incidence and recruitment potential are convincing evidence of the utter futility of artificial aid to pike production.

The background coloring of pike is usually a light green, interrupted by short white bars on the sides. The green darkens to almost black on the back, and fades to white on the belly. Sometimes very large specimens lack the lighter-colored bars, and have a uniform grayish coloration. The long protruding "jaw" and "spoonbill" facial characteristics of pike are a familiar sight to most fishermen. Pike often grow to a considerable size and age. Specimens of around thirty pounds weight and eighteen years of age are not an uncommon occurrence. Although much maligned because of its predatory and damaging feeding habits, the pike still deserves a place in our waters. As a game fish it is excellent, especially if taken on light tackle, when it puts up an admirable battle. As a natural control of suckers, on which it feeds extensively, it has no equal. This alone is enough to ensure the pike a welcome in

most of our lakes. It is interesting to note that in many parts of the United States, where the pike is less abundant because of a warmer climate, it is as highly regarded as the trout here, and considerable time and money is devoted to its propagation.

For many years an angler's belief has prevailed that, with various degrees of modification, the pike lose certain of their teeth during late summer, and thus are more difficult to catch because of a consequent loss of appetite. Recent investigations have shown this to be only partly correct. Pike do lose, from time to time, members of the set of large compressed canine teeth which line the hinder two-thirds of the side of each lower jaw. This loss is, however, continuously replaced by new teeth being developed in the gum sections, and an effective number of teeth remain in service at all seasons. There is no evidence of seasonal fluctuations in these losses and replacements, and the number of teeth tends to remain constant throughout the life of the pike, averaging about sixteen teeth per jaw.

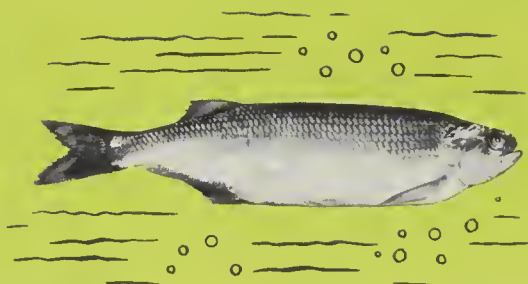
The effective propagation of pike depends largely upon the extent of adequate spawning facilities of a type noted above, plus enough continuous water supply to ensure the "hatching" of eggs and the movement of young fish to deeper waters.

#### ELBOW FALLS



# Goldeye

**Amphiodon  
alosoides**



STRANGE as it may seem to the many Albertans who commonly catch goldeye in both the North and South Saskatchewan drainages, very little has been recorded about this fine food fish. Most of the available data comes from the province of Manitoba where, for many years, the marketing of smoked goldeye has been a part of the fishing industry.

A similar product from Alberta waters of the far north has recently been placed on the market here.

The goldeye is mainly insectivorous in feeding habits, but certain small clams, young fish, and minnows all contribute to its diet. Noteworthy in this respect is the recent report of a large amount of young pike being found in the stomachs of specimens taken from an Alberta lake. Most investigations, however, have reported a preponderance of insect remains in stomach analyses.

Excepting the presence of a prominent lateral line, the silvery scaled body of the goldeye closely resembles that of the marine herring. There is no adipose fin as in the whitefish, and the eyes, from which its name is derived, are prominent and golden in color. A relatively small fish, the goldeye will average out around a pound in weight, and twelve inches in length. Occasional specimens may reach two pounds.

This species is a spring spawner, using rivers, and river deltas for that purpose. Spawning maturity is seldom reached before the fourth year, and recent investigations have disclosed no proof for the supposed irregularities in the spawning times of mature fish. It is, therefore, assumed that mature goldeye spawn every spring in a normal manner, and not, as has sometimes been stated, twice a year or once in two years. Quick development within female ovaries has been noted after spawning, and it is possible that this characteristic may have sponsored the idea that ripe fish were found in the fall.

Goldeye provide excellent angling, rising nicely to a fly, or taking the baited hook. The smoked and cured flesh of this fish is a delicacy not soon forgotten.





# Yellow Perch

*Perca  
flavescens*

**T**HIS fish is commonly referred to as perch. Its diet is partly piscivorous, but it also eats crustacea, insects and insect larvae.

The perch spawns in the spring and the female deposits the eggs in a long ribbon, which settles to the bottom or among the weeds along the shore. Some of these egg ribbons attain considerable length, often reaching to seven feet.

The brilliant coloring of perch is its most distinguishing feature. Olive on the back, its golden yellow sides are marked with six or eight broad, dark, vertical bars. The lower paired fins are a bright orange, and the front member of the double dorsal fin is spiny tipped. The perch is a small fish, seldom exceeding one and one-half pounds in Alberta waters. Spawning maturity may be reached at a weight of three ounces.

The perch is abundant in many Alberta lakes and a favorite among anglers. It is usually easily caught. It has very superior value as a pan fish. Commercial catches are made as well, some 240,000 pounds being marketed in 1947.

## PICKEREL or YELLOW PIKEPERCH

*Stizostedion vitreum*

**T**HIS second member of the percidae family is also called walleyed pike, dore, yellow pike, or to the "trade" just plain "yellow". The pickerel belongs in the predator class, and as such, often competes with the northern pike for living space. Its incidence in Alberta waters is much below that of either pike or perch, and it is also more wary game than either of these species. The more popular waters are at Lac St. Anne, Buck Lake, and Baptiste Lake. It appears also to have migratory habits which make its detection rather difficult for the angler.

Spawning takes place in early spring, and sometimes before the ice has left the lake. Shoal waters, gravel, and sand bars are used as spawning beds.

The walleyed pike does not develop to the same size as the northern pike, one of the largest reported weighing in the neighborhood of thirteen pounds. Our Alberta "walleye" is easily distinguished by the double dorsal fin, the spiny rays of the front dorsal, and the color. This last is a dark olive with brassy mottling in oblique bars, and with black splotches on the spinous dorsal fin.

The "walleye" is much sought after by both commercial fishermen and anglers. The very uncertainty of its migrations may, perhaps, lend to its allure, and the fine quality of its flesh makes it altogether one of Alberta's finer food products.

Two other members of the percidae family, found in Alberta waters are worthy of mention. These are the "Darters", the **Johnny Darter**—*Boleosoma nigra*, and the **Iowa Darter**—*Poecilichthys exilis*. These very small fish are not often seen, but may be recognized by their perch-like double dorsal fin structure, and a peculiar darting motion. They rarely exceed a length of two inches.

## STURGEON

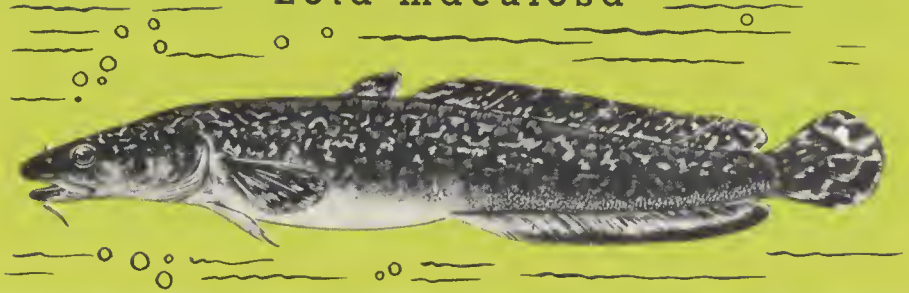
### *Acipenser fulvescens*

THE rare appearance of this species is limited to the North and South Saskatchewan rivers. Some fear is felt for their eventual extermination, and their capture is prohibited. They grow very slowly, but attain very great size with a correspondingly long life span. The sturgeon feeds mainly on fly larvae, molluscs and cray fish, gleaned from river and lake bottoms. Once rather common, they are now seen only rarely.



# Burbot

*Lota maculosa*



SOMETIMES called "ling", in the north "maria", and at the Great Lakes, "lawyer" or "eel pout", this species of fish may be found in most Alberta waters with the exception of the swift flowing, cold streams in the immediate vicinity of the Rocky Mountains. The burbot's relationship to the Gadidae or cod family has given rise to the name "fresh-water cod", also used in some localities.

The burbot suggests the reptilian when first seen in the water, and a sinuosity that attends its movements does nothing to detract from a generally repulsive appearance. It has a broad, flat head, and a barbel or tendril-like skin appendage hangs from the lower jaw. With scales so imbedded as to appear non-existent, the rather long, eel-like body is mottled along the back and sides, intergrading from black to a murky tan. Its usually distended belly is white. A double dorsal fin is in evidence, but more noticeable is the extent of both the second dorsal and a matching anal fin. Having about seventy fin rays each, these extend to almost join the tail fin, which is rather small by comparison and presents a convex curved extremity.

Burbot food consists mainly of other fish, whitefish and tullibee receiving the most attention in this respect. A favorite burbot trick is to attack other fish caught in a gill net, and they are often found with a securely gilled tullibee almost completely swallowed, in which case they will not disgorge until lifted bodily from the water when the net is drawn into a boat. There have been reports of spawn predation by this species, while crustaceans and insect larvae also augment an otherwise piscivorous diet.

A later winter and early spring spawner, a female burbot produces a very large number of eggs, that measure, on the average, only one millimeter in diameter. Growth rate places the burbot roughly in the same size class as pike. An interesting feature of the study of the cod family is the method used for determining the age of individual specimens. It is a well known fact that age determination of most fish is made by reference to a set of concentric circles appearing on the scales of the fish, (much the same as shown on a transverse section of a tree trunk).

These circles, or annuli, as they are called, have been formed by the restrictions of scale growth occurring during succeeding winters. Thus by counting the number of winters, (in a manner of speaking), the age of the fish may be estimated. In the case of the gadidae or cod family, of which the burbot is a member, an insignificance of scales excludes this method of age estimation. Another procedure is used which involves the "otoliths" of the inner ear. These are small particles of lime which occur inside the inner ear in all animals. The term otolith means literally ear stone. When the otolith is split lengthwise, the revealed surface is marked by a series of concentric circles, formed by alternating clear and opaque rings in the structure of the otolith. Counting the opaque, or winter, rings on this surface will determine the age of a fish. In both scale and otolith methods the use of low power magnification is required.

This species has not attained much commercial importance, in spite of the fact that its flesh, cod-like, is white, flakey and extremely tasty. It may be taken on a baited hook as well as in a gill-net. A noticeable feature of burbot viscera is the large size of its liver, a cod feature as well.

## SCULPINS

MILLER'S THUMB—*Cottus cognatus*

RICE'S SCULPIN—*Cottus ricei*

THESE queer looking small fish inhabit Alberta's lakes and streams to a moderate extent. A narrow bodied, large headed fish, rarely exceeding five inches in length, they have relatively large pectoral fins, which give them the appearance of having wings. The pelvic fins are placed well forward on the body, appearing, with the pectorals, just back of the head. They are most often seen in rocky shallows of streams or lakes.

## TROUTPERCH

*Percopsis omiscomaycus*

THIS small fish, a member of the family percopsidae, grows to a length of only three or four inches. The troutperch has the ctenoid, or bristle margined scales of the perch, and an adipose fin, which is generally considered a trout characteristic. They are often mistaken for trout fry, a quite excusable error in view of their appearance. Reasonably common in Alberta waters the troutperch has value, chiefly as a forage fish.



# STICKLEBACKS

5 SPINED or BROOK STICKLEBACK — *Eucalia inconstans*

9 SPINED STICKLEBACK — *Pungitius pungitius*

THE sticklebacks belong to a separate family of spiny-backed fish called the gasterosteidae. The brook stickleback is by far the more common of the two, and may be very easily recognized by the five (and occasionally six), spines that appear on its back. They are very numerous in Alberta, and appear to have the facility for maintaining themselves in waters of low oxygen and low food content. Excessive numbers are often found in lakes with a low productive capacity for other fishes. In some lakes they provide forage material.

## LUNDBRECK FALLS





# A NOTE ON MINNOWS

At this point it seems advisable to clarify just what classification is implied by the term "minnow". Minnows are not necessarily just small fish. Indeed, in certain instances species of minnows grow to considerable length, and in the Columbia River one species is known to have reached a length of four feet. Minnows are those fish which belong in the family cyprinidae, which group, incidentally, embraces the greatest number of fish genera, and species of any fish family. Thus it follows that they are called minnows because they embody certain taxonomic features, typical of the cyprinid family, and **not** because they are small fish. True the cyprinids include a large number of species that reach maturity at a small size and it is this feature that causes the observer to group most small fish under the one name, "minnow". Sucker and perch fry, so often seen in lake shallows during the summer, are not minnows at all, and should never be confused as such. Following are brief references to some Alberta minnows.

## FLATHEAD CHUB

*Platygobio gracilis*

**T**HIS fish has been reliably reported in the Athabasca and Peace River drainages. It is a cyprinid that grows to about one pound in weight, and lives in streams.

## CREEK CHUB

*Couesius plumbeus*

**A** FAIRLY common inhabitant of mountain and foothill streams, the creek chub seldom exceeds four to five inches in length.

## LONG-NOSED DACE

*Rhinichthys cataractae*

**T**HESE dace are often mistaken for young suckers, but may be otherwise identified because they have not a thick-lipped sucker mouth. Rather common in Alberta streams.

## NORTHERN PEARL DACE

*Margariscus margarita*

A DARK stripe, running along side, against a light background is the distinguishing mark of this species of cyprinid. Growing to a good six inches in length, they provide a large proportion of the available forage material in Alberta lakes. It is widely used as angling bait. Common with all cyprinids, this is a spring spawner.

## RED BELLIED DACE

*Chrosomus eos*

THE least common of the dace found in the lakes and streams of this province.

## SPOTTAIL SHINER

*Notropis hudsonius*

THIS cyprinid is most easily distinguished by the black spot which occurs at the junction of the tail-fin rays and the body. A silvery coloration to its sides provide the basis for the name "shiner", and it may easily be located by the way it "flashes" as it twists and turns in movement, and repeatedly exposes its silvery sides. It rarely exceeds six inches in length, and most Alberta specimens are seen at smaller sizes. It is common to a large number of Alberta waters.

The spottail, a true cyprinid, spawns in the spring. It eats algae, insect larvae, and crustacea. It is able to maintain itself in a wide variety of water conditions throughout the province.

Its chief value is as forage fish for other species. Pike, walleye, perch, and trout, will all take spottail when they can get it, and it also is used extensively as hook bait by fishermen.



### PICTURE CREDITS

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# NORTHERN FATHEAD MINNOW

*Pimephales Promelas*

BECAUSE the head of the male of this species may become very black during the spawning season, it is often called the blackhead minnow. Small tubercles may also cluster on the head at this season. Somewhat on the small side, the fathead will average at about two inches in length, and appears stunted in profile because of a proportionately deep fore-body and head. It often has a faint caudal spot, and the lighter female may be sometimes confused with the spottail (above).

The early summer spawning actions of this species have been observed, and are worthy of note. It was noted that after the eggs were fertilized and affixed to the underside of a rock or stick, in the water, the male fish remained with them, viciously attacking any other fish that intruded upon the immediate spawning area. He also maintained what appeared to be a constant to and fro motion near the eggs, possibly to help aeration. It was not determined if he remained there until the fry hatched, but there was no doubting his attention to this particular duty at the time of observation.

Fathead diet consists chiefly of crustacea and insect larvae gleaned from the bottom mud. It has value as a forage variety.







# GILL-NET FISHING

GILL-NET fishing is carried out in Alberta for the purpose of securing certain fish in marketable quantities, or at least to provide food for the fisherman or his immediate community. This pursuit is a vocation, unlike angling which is called sport. Indeed, handling gill-nets during the sub-zero weather of Alberta winters is an enterprise that calls for a stout heart and a strong constitution and could not be termed recreation by any stretch of the imagination. The fish claiming the most attention from this industry are, in order of their annual values: whitefish, tullibee, pike, pickerel, perch, suckers, lake trout, and goldeye.

The whitefish is by far the most important single commodity of the Alberta fishing industry. There are more than fifty lakes in the province from which this species is taken in commercial quantities, the chief of these being Lesser Slave Lake, Calling Lake, Muriel Lake, Buck Lake, Wabamun Lake, Lac St. Anne, Lake Newell, and Lake McGregor. Fishing is carried on in both winter and summer when a gill-net of five and one-half inch mesh may be used. Various means of conserving the whitefish of the province are applied but mainly reliance is placed on the use of restricted mesh sizes and the length of gill-nets, plus poundage production limits for individual lakes. Age and growth data, gathered from the important lakes, provide the administrators with a background from which to estimate lake production quotas. To date the application of these measures has served the industry well.

A large part of Alberta's tullibee resources are channelled through the fur farm industry. A tapeworm infestation among these fish has resulted in keeping the bulk of the product away from the domestic market. Tullibee numbers are not conservevd in the same manner that whitefish are because there have been indications that heavy fishing results in a decrease of tapeworm infestation, not only among the tullibee themselves, but also in whitefish that inhabit an infested water area. For this reason the sacrifice of tullibee to a demanding fur market

is, at present, allowed on certain lakes, in an attempt to control the infestation of important whitefish areas. The provision of a cheap fur food by this means is a project not without merit.

Pike receive some attention from fishermen largely because of their availability. A low market price does much to protect this species from over-fishing, but control of poundage and gill-net size is exercised by the fisheries administration. The high rate of natural pike reproduction is also a protective feature of the life of this species.

Pickering and perch are both fished in various Alberta lakes. Protection is given these fine food fish through application of the same legislation that restricts the "take" of whitefish and pike. Fishing during spawning time, when large numbers of fish are confined in a relatively small area, is also carefully avoided here as with the other species.

Sucker catches are not regulated in any way. They are really taken as a by-product of the other fishing operations, and are marketed in small quantity at low prices since the only cost involved is the additional handling and packing. The demand for suckers is low and generally confined to places outside the province.

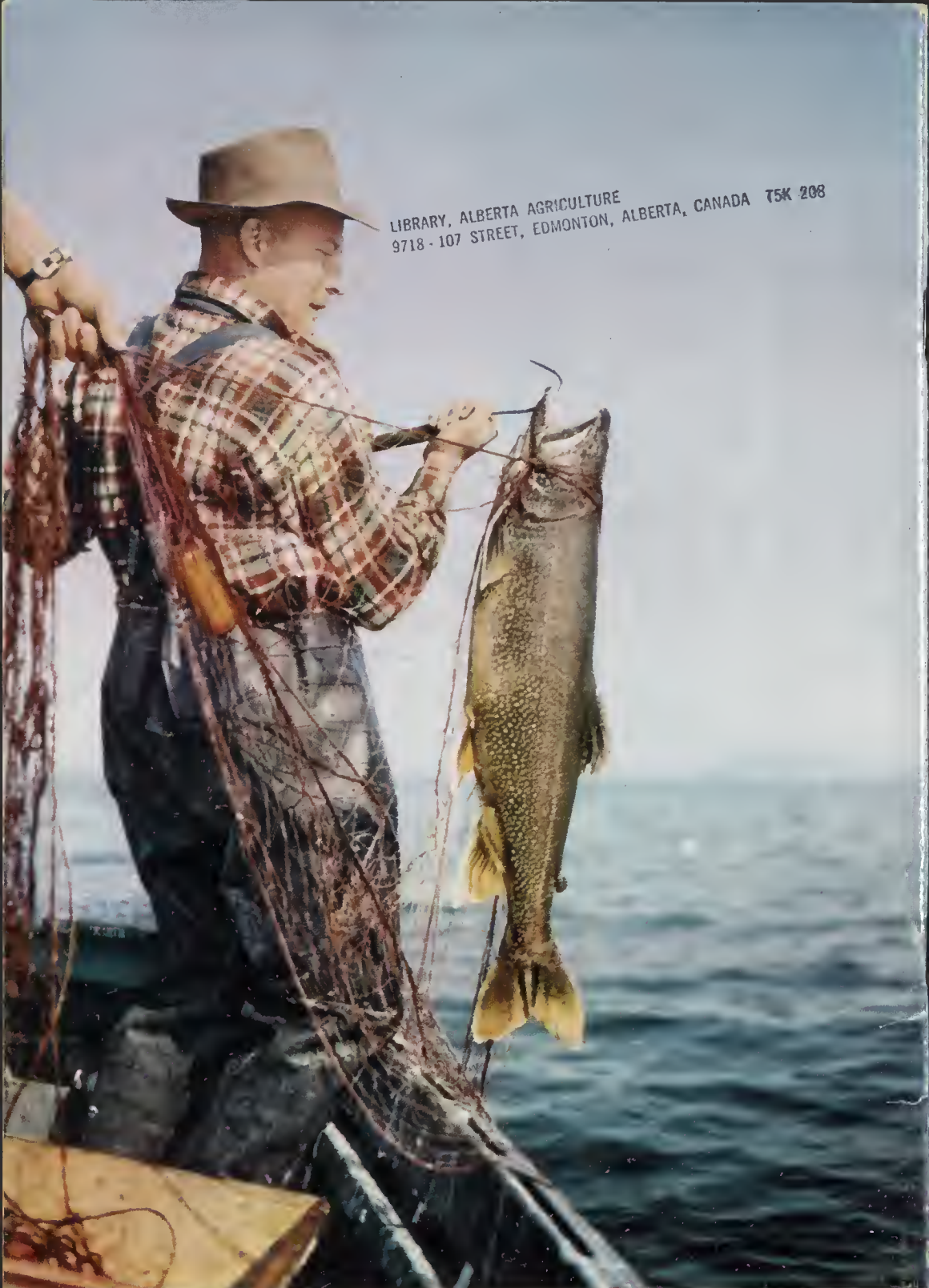
Lake trout fishing in the province is limited by a negligible supply. Only two lakes supply the trout in commercial quantity, and their poundage is further restricted by quota. This fish, which incidentally claims the highest market price, is a relatively insignificant part of the Alberta fishing industry.

Goldeye were only lately exploited as a commercial fisheries product from an area in the far north of the province. Only a few thousand pounds have reached the market. They are not yet a significant feature of fishing operations.

The commercial fishing industry of Alberta is confined largely in the hands of a half-dozen wholesale dealers. Fishermen now find their profession to be an itinerant one, because many of the better whitefish lakes are "open" for only short periods of time as a conservation measure, and the fisherman moves from lake to lake as the quotas are used up. Rarely can a fisherman look forward to a full season's operation at any of the Alberta fisheries. Much of the whitefish production reaches eastern Canada and the United States, and it is chiefly the large proportion of export involved that provides the fisherman with a return reasonably commensurate with the effort involved. The present rate of exploitation does, however, appear to be a proper balance to natural reproduction, and it would appear that little increase can be foreseen in the marketing of this product or in the size of the industry.







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